

# A CONTRIBUTION TO THE BIOLOGY OF HOUBARA BUSTARD: 1983-84 POPULATION LEVELS IN WESTERN BALUCHISTAN<sup>1</sup>

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(With a text-figure)

The analysis of 6 quadrats in western, 2 in central, 6 in eastern Chagai and 13 in Kharan administrative districts (Baluchistan, Pakistan) suggested that in the latter half of February 1984 the density of the Houbara Bustard (*Chlamydotis undulata macqueenii*) was highest in western Kharan (1.1125 birds/km<sup>2</sup>), followed by eastern Chagai (0.4375), central Chagai (0.3438), eastern Kharan (0.1250) and lowest in western Chagai (0.0208). The quadrat data suggests that there are still some 15,000 - 20,000 birds wintering in Baluchistan.

## INTRODUCTION

The flat, open, desolate valleys of western Baluchistan with loose sandy background and optimal sparse distribution of shrubs are known to harbour a good wintering population of the Asian race of the Houbara Bustard, *Chlamydotis undulata macqueenii* (Ali and Ripley 1969, Anonymous 1972). Our previous studies have tended to suggest that this region harbours a comparatively rich population of the bustards, as compared with various other known populations of such a large bird (Mian and Surahio 1983, Mian and Rafique 1984, Mian and Dasti 1985). We did attempt to develop a map of the region depicting the tentative relative concentration, depending upon the hunting successes of the Arab falconers (Mian 1984). However, no scientific survey of the population levels has been undertaken. This paper attempts to report the results of a partial and preliminary survey of this bustard species in certain favourable areas, which are known to hold a sizeable population of this species, specially in Chagai and Kharan districts.

## MATERIAL AND METHODS

A survey of the favourable areas in Chagai, i.e. Nokkundi (28° 85'N, 62° 76'E), Yakmuch (28° 79'N, 63° 90'E), Padag (29° 03'N, 65° 14'E) and Nushki (29° 56'N, 66° 06'E); and Kharan, i.e., Jalwar (28° 53'N, 64° 92'E) and western Kharan (28° 33'N, 65° 00'E), districts was undertaken in the lat-

ter part of February 1984. The quadrat method was employed in all these areas in order to find the population levels of the Houbara Bustard. A party of three workers (the author along with two prominent local hunters of the area) travelled in a jeep for a predecided distance of 16 km, at a moderate speed (15-25 km per hour), tending to maintain a straight line. Each looked for the bird in a predecided direction, so that a maximum band was covered efficiently. Whenever one of us spotted a Houbara Bustard, it was almost immediately reported to the others. Generally, on spotting the jeep in the vicinity of the located bird, all the birds present around in an area of 200 m would take to their wings. These flying birds were easily counted. It was believed that by this technique, on an average, a band of some 500 m could be covered efficiently. Thus, the calculations regarding the density of the Houbara present in a quadrat was based upon the assumption that each quadrat, covered an area of some 8 km<sup>2</sup> (16 x 1/2 km). Different numbers of quadrats were studied in different areas in accordance with the total area of the favourable tract and the time at our disposal. Each quadrat area was at a distance of half an hour's free drive from the finish point of the last quadrat area. The overall density of the bird population, in an area was calculated by pooling the data of all the different quadrats in the specific area. Sokal and Rohlf (1969) were followed for statistical analysis.

The observations on the three quadrats were carried out starting soon after sunrise upto 1100 hrs. and on two/three from 1600 hrs. till a little after sunset, with the assumption that during these comparatively cooler parts of the day, the birds would be out of their roosting places, picking up food in the field, thus providing a greater chance of seeing all the birds present in the area.

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A selected number of the hunters, shepherds and nomads in each of these areas were also interviewed. They were questioned regarding the number of the birds seen during the last few days and the approximate distance travelled for such an observation. It was believed that a casual observer could observe the presence of the bird in a band of some 200 m. The records were, however, maintained as a check to our observations, and were never subjected to a detailed analysis. Our quadrat data generally agreed with the observations of the local populace.

### RESULTS

Table 1 presents the data regarding number of birds observed, and the calculated population density, in each of the quadrats studied in Chagai and Kharan districts. The table indicates that the population density of the Houbara Bustard is very low in otherwise quite favourable tracts of the western region of Chagai, i.e., Nokkundi and Yakmuch. The overall density of the bird population, calculated from six different quadrats examined in the region, is worked out to be 0.0208 birds per km<sup>2</sup>. These observations were corroborated by the fact that, despite our best efforts, we could spot footprints of the bird at only four places. Further, the information from the local hunters and shepherds also indicated that they had hardly seen a bird in the area since January 1984. The data obtained from the two other quadrats, in the central Chagai, i.e., Padag, indicated that there was an adequate population of the Houbara, with a calculated density of 0.6875 birds per km<sup>2</sup>.

The quadrat data seems to be rather an overestimation of the actual bird population density in the area, as small plains with almost equal areas under hilly terrain are alternately distributed in this region. We could spot many footprints on the loose soil present in almost all the dried water courses scattered in the hilly terrain, and we are of the opinion that almost all the birds move to the hilly terrain during the hotter part of the day, coming out into the plains for picking up food during the morning and evening. Thus our quadrat data, collected in the evening session from the plain areas would include the birds which are actually dispersed in both hilly and plain areas. In the light of these facts, a reasonable estimate of the population of this bird would be half

of the one obtained through our quadrat analysis. Hence the overall population density of the bird in this area comes to about 0.3438 birds per km<sup>2</sup>. The favourable tract of the eastern Chagai, i.e. Nushki, bears a reasonable population density and the pooled data obtained from six different quadrats analysed in the area suggest an overall density of 0.4375 birds per km<sup>2</sup>. The major part of the population of the eastern Chagai is the migratory flock, which is at this part of the year on a return migration towards their summering grounds.

Table 2 presents a reasonable estimate of the Houbara Bustard, expected to be present in different areas of Chagai and Kharan. The presently available information suggests that, towards the latter part of February 1984, some 14,840 birds were present in the area of Chagai and Kharan, permitting a reasonable guess that some 15,000 birds are present in these two districts and their adjacent areas.

Different quadrat areas are remarkably different from one another with regard to the topography, background soil and the general vegetation. Generally, all these areas bear loose background soil with sandy or loose stony cover. All these areas are flat, with different degrees of scattered sand dunes or small hills. The vegetation of these plains can be regarded as wasteland steppe, having scattered shrubs of *Haloxylon ammodendron*, *Anabasis* sp., *Pennisetum dichotomum*, *Calligonum comosum*, *Koehleria phloeoides* and *Ephedra* sp., which are distributed to varying degrees in the different areas. Persistent drought in the western Chagai had stopped the sprouting of shrubs, annual herbs and grasses. However, a moderate precipitation during the winter months has caused a reasonable vegetation in the central and eastern Chagai as well as in Kharan. It was believed that the Houbara was attracted towards the wheat fields during the night and we could confirm the presence of a single bird in the wheat field at about 2100 hrs. However, it could not be confirmed whether the Houbara does consume parts of the wheat plant or is attracted to some associated vegetation or insects.

### DISCUSSION

The results of the quadrat data collected from the different areas of Chagai and Kharan suggest that towards the latter half of February 1984,

TABLE 1  
OBSERVED NUMBERS AND CALCULATED DENSITY OF THE HOUBARA BUSTARD IN DIFFERENT QUADRATS (8 KM<sup>2</sup>) IN CHAGAI AND KHARAN DISTRICTS (BALUCHISTAN, PAKISTAN), AS STUDIES IN FEBRUARY, 1984

General Area	Approximate Location of quadrat	Number of birds observed	Calculated density (birds/km <sup>2</sup> )	Overall calculated density in general area (birds/km <sup>2</sup> ± s.e)
Nokkundi	Koh-i-Sultan	—	0.00	
Yakmuch	Gut Game Reserve	—	0.00	
(Western Chagai)	Non Reserved area	—	0.00	0.0208 ±
	Ghala Chah	1	0.125	0.0208
	Gonnakoh	—	0.00	
	Dalbandin	—	0.00	
	Dalbandin	—	0.00	
Padak (Central Chagai)	Masseti Railway	—		
	Landi	6	0.75	0.6876 ±
	Pul Chotao Dak	5	0.625	0.0616
Nushki (Eastern Chagai)	Dak (Zanghi Nawar)	2	0.25	
	Inam Bostan Dak	4	0.50	
	Jal Kilghi	5	0.625	0.4375 ±
	Amir Dal	3	0.375	0.0089
	Amir Dal	3	0.375	0.0089
	Amir Dal	4	0.500	
	Amir Dal	3	0.375	
Kharan (Western, high density area)	Kissan Pat	7	0.875	
	Bengalzai	9	1.125	
	Garruk	8	1.000	
	Tagab Dal	4	0.500	1.1125 ±
	Tagab Dal	3	0.375	0.1692
	Bedi	6	0.750	
	Chinie	10	1.250	
	Haji Chah	12	1.500	
	Kili Wafa	13	1.625	
	Shahugheri	17	2.125	
Kharan (Eastern, low density area)	Tatagar	—	0.000	
	Baz Pat	2	0.250	0.125 ±
	Shelli Pat	1	0.125	0.0510

TABLE 2  
APPROXIMATE ESTIMATES OF THE POPULATION OF THE HOUBARA BUSTARD IN DIFFERENT REGIONS OF CHAGAI AND KHARAN DISTRICTS, IN FEBRUARY 1984

General Area	Approximate area* with bustard habitat (km <sup>2</sup> )	Density of** Houbara (bird/km <sup>2</sup> )	Estimated Population
Western Chagai	10,000	0.0208	208
Central Chagai	3,500	0.3438	1,193
Eastern Chagai	1,700	0.4375	748
Kharan (Western, high density area)	12,750	1.1125	12,515
Total	27,950		14,664

\* Excluding the areas under steep hills and about 1/4th of the area rendered unfavourable by human settlements in the area.

\*\* From Table 1.





Fig. 1. Line sketch of Baluchistan, showing relative population density of the Houbara and approximate location of the areas mentioned in text.

1. Nokkundi 2. Yakmuch 3. Dalbandin 4. Padag 5. Nushki 6. Panjpai 7. Mashkhel 8. Plantak 9. Washuk 10. Shamshi 11. Tagab 12. Shelli Pat 13. Baz Pat 14. Kharan 15. Tatagar 16. Jalwar 17. Garruk.

the density of the Houbara was highest in western Kharan (1.1125 birds per km<sup>2</sup>) followed by eastern Chagai (0.4375), central Chagai (0.3438) and eastern Kharan (0.125). Western Chagai had a very scanty population with overall density of just 0.0208 birds per km<sup>2</sup>. The preliminary results allow us to suggest a tentative distribution map of the Houbara population in these two districts (Fig. 1). The population density of the wintering Houbara in central and eastern Chagai and western Kharan, during February 1984, is thus higher than the one estimated for the Punjab (Pakistan, 0.12 birds per km<sup>2</sup> in Cholistan; Goriup 1980) and the Sind (Pakistan, 0.333 birds per km<sup>2</sup>; Surahio 1981, 1982). It would also suggest that the favourable tracts of Chagai and Kharan harbour a very rich population of this bustard species (overall density of 0.5580 birds per km<sup>2</sup>). Thus this is the richest population of the Houbara Bustard throughout the

world (Goriup 1980, 1981).

The population of the bird seems to be the highest in Kharan and the region suggests an overall density of 0.8846 birds per km<sup>2</sup> (pooled for the total area of Kharan). A band of very favourable bustard tract extends over an extensive area running from Garruk, in the southeastern Kharan, through Shamsi Lorha, Ahmad Shah, Zangi and Sabzab to Siahkoh in northwestern Kharan (Mashkhel), and Washuk and Planktak in southwestern Kharan. All these areas have a very high bustard density, which is estimated to be around 1.1125 birds per km<sup>2</sup>. Certain other areas around Kharan exhibited a comparatively low density of the bird population with 0.00, 0.125 and 0.250 birds per km<sup>2</sup>, in Tatagar, Shelli Pat and Baz Pat respectively. The overall density in these comparatively low bustard areas of Kharan is calculated to be 0.125 birds per km<sup>2</sup>, and this low density is attributed to human disturbances in the

area (Fig. 1).

Our results tend to suggest that some 15,000-20,000 birds of this bustard species were present in Chagai and Kharan districts and adjacent areas in February 1984. These estimates provide a reasonable idea regarding the total number of the birds which spend the winter in southern and south-western Baluchistan and the adjacent areas, because the return migration of this bustard towards the northern latitudes had already started. The birds of the southern and western (comparatively hotter) regions, like Punjgur, Mekran, Sibi, Kohlu, Mari and Dera Bughti had already moved into the northern areas of Kharan and Chagai. Our discussions with the local hunters in the southern parts of Kharan, i.e., Tagab Dal, indicated that whereas some 3-4 birds were seen in the two quadrats studied by us, one could easily observe 15-20 birds during a walk of some 20 km during the month of January. Further, the declining population levels in the southern areas like Washuk and Plantak might have forced the visiting Arab falconry party to move to the northern areas of Urmagai in northeastern Kharan towards the end of February. Similarly, the area around Nushki (eastern Chagai) is known to have had a very meagre population of the bird till January, but the present population density of the bird was quite high (0.4375 birds per km<sup>2</sup>) in the

region during this part of the year. The only other area expected to hold a population of the Houbara during this part of the year are towards Panjpai (29° 46'N, 66° 46'E), Patao Dal (30° 82'N, 68° 47'E, approx.) and Zhob, which are comparatively smaller tracts with a capacity of holding not more than 400-500 birds.

The present estimate regarding the total population of the Houbara Bustard in Baluchistan comes reasonably close to our previous density estimates regarding this population, which were mainly based upon the hunting successes of the Arab falconers in the area (Mian 1984). Further, one cannot expect the visiting hunters in the area to claim very high bag sizes in a small population. These estimates also fall close to the one suggested for a 250,000 km<sup>2</sup> tract in the Kyzyl Kum province of the U.S.S.R., which is regarded as the main breeding grounds of the bustard (one pair per 15-20 km<sup>2</sup>, giving a total population of 28571 birds; Ponomareva 1979).

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